## Claims

What is claimed is:

1. A signal processor arranged and constructed to recover a sequence of symbols from a received signal, comprising:

a symbol selector for selecting a symbol based on the received signal over a time period including previous symbol periods, said symbol period, and a number of additional symbol periods, where said number of additional symbol periods depend on the inter symbol interference associated with the received signal.

2. The signal processor of claim 1 wherein said symbol is selected based on said additional symbol periods equaling two.

3. The signal processor of claim 1 further including a trellis processor for providing, for each symbol period, said symbol selector with one surviving path to each of a plurality of symbol states, said plurality of symbol states corresponding one to one to a plurality of symbols, said one surviving path including a sequence of branches, one branch for each symbol period, said one branch corresponding to a transition from one to another of said plurality of symbol states.

4. The signal processor of claim 3 wherein said one surviving path to each of said plurality of symbol states further includes a path metric and said symbol selector selects a symbol for said number of additional symbol periods earlier corresponding to a one surviving path having the better path metric.

5. The signal processor of claim 4 wherein said trellis processor provides said path metric as an adjusted metric where each of said path metrics have a same adjustment as said adjusted metric.

6. The signal processor of claim 3 wherein said trellis processor determines said one surviving path according to a metric for each of a plurality of paths to each of said plurality of states, said metric corresponding to a correlation between the received signal and a template for each branch that is part of said each of a plurality of paths.

7. The signal processor of claim 6 wherein said metric further corresponds to a half energy of said template for said each branch.

8. The signal processor of claim 3 further including a correlator for providing to said trellis processor, for each symbol period, a correlation between the received signal for said symbol period and each of a plurality of templates where each of said plurality of templates corresponds to a possible transition from one to another of said plurality of states.

9. The signal processor of claim 8 wherein said plurality of said templates is selected to facilitate providing said correlation.

10. The signal processor of claim 8 where said received signal is a Bluetooth signal using 2 state frequency shift keyed modulation, a variable length packet size, and said number of additional symbol periods is two.

11. The signal processor of claim 8 where said received signal is sampled four times per said symbol period spaced at 1/4 of said symbol period with a first sample at 1/8 of said symbol period and each of said correlations is performed on four samples spaced across a symbol transition.

12. The signal processor of claim 1 further including a means for carrier error correction that determines the difference between an expected received signal based on the sequence of symbols recovered and the received signal and uses said

difference to provide carrier error correction.

13. A signal processor arranged and constructed to recover a sequence of symbols from a received signal, comprising in combination:

a correlator for providing a plurality of correlations between a received signal and a plurality of corresponding templates for each symbol period, each template corresponding to a possible transition from a first symbol to a second symbol within a plurality of symbols;

a trellis processor for assigning metrics to a plurality of branches on a trellis for said each symbol period, said metrics corresponding to said plurality of correlations, said trellis processor further, for each symbol time, providing a path and a composite metric for each node and trimming all other paths that terminate at said each node, said each node corresponding to one symbol of said plurality of symbols, where said composite metric corresponds to a one of said metrics assigned to a one of said plurality of branches and a previous composite metric associated with a previous node where said one of said plurality of branches originated, said composite metric being better than other composite metrics corresponding to said other branches, said one of said plurality of branches being the latest branch in said path; and

a symbol selector, responsive to said path and said composite metric for each node, for selecting said path having a better composite metric and for selecting a symbol corresponding to a node on said path at an earlier symbol time period, said earlier symbol time period dependent on inter symbol interference associated with the received signal.

14. The signal processor of claim 13 wherein said symbol is selected to correspond to said node two symbol time periods earlier.

15. The signal processor of claim 13 wherein said trellis processor provides said composite metric as a difference metric, said difference metric representing

the difference between composite metrics for said path for said each node.

16. The signal processor of claim 13 wherein said plurality of said templates are selected to facilitate providing said correlations.

17. The signal processor of claim 13 where said received signal is a Bluetooth signal using 2 state frequency shift keyed modulation, a variable length packet size, and said earlier symbol time period being two symbol time periods.

18. The signal processor of claim 13 further including a means for carrier error correction that determines the difference between an expected received signal based on the sequence of symbols recovered and the received signal and uses said difference to provide carrier error correction.

19. A method of recovering a sequence of symbols from a received signal, including the steps of:

selecting a symbol based on the received signal over a time period including previous symbol periods, said symbol period, and a number of additional symbol periods, where said number of additional symbol periods depends on the inter symbol interference associated with the received signal.

20. The method of claim 19 wherein said step of selecting said symbol over said time period including said additional symbol periods includes two additional time periods.

21. The method of claim 19 further including a step of providing, for each symbol period, one surviving path to each of a plurality of states, said plurality of states corresponding to a plurality of symbols, said one surviving path including a sequence of branches, one branch for each symbol period, said one branch corresponding to a transition from one to another of said plurality of symbols.

22. The method of claim 21 further including a step of providing a path metric corresponding to said one surviving path to each of said plurality of states and said step of selecting includes selecting a symbol for said number of additional symbol periods earlier corresponding to a one surviving path having the better path metric.

23. The method of claim 22 wherein said step of providing said path metric includes providing an adjusted metric where each of said path metrics have a same adjustment as said adjusted metric.

24. The method of claim 21 further including a step of determining said one surviving path according to a metric for each of a plurality of paths to each of said plurality of states, said metric corresponding to a correlation between the received signal and a template for each branch that is part of said each of a plurality of paths.

25. The signal processor of claim 24 wherein said metric further corresponds to a half energy of said template for said each branch.

26. The method of claim 24 further including a step of providing, for each symbol period, said correlation and a step of selecting said templates to facilitate providing said correlation, each of said templates corresponding to a possible transition from one to another of said plurality of states.

27. The method of claim 26 where said received signal is a Bluetooth signal using 2 state frequency shift keyed modulation, a variable length packet size, and said number of additional symbol periods is two.

28. The signal processor of claim 26 where said received signal is sampled four times per said symbol period spaced at 1/4 of said symbol period with a first sample at 1/8 of said symbol period and each of said correlations is performed on

four samples spaced across a symbol transition.

29. The method of claim 19 further including a step of determining a carrier error based on a difference between an expected received signal based on the sequence of symbols recovered and the received signal and using said difference to provide carrier error correction.